

mathematics." What was to be done? Lord Dunraven tells us that he does not pretend to be a master of any of these subjects, but he was determined that his book should do for the extra masters of the future what it had done for those in the past, so he heroically mastered the necessary amount of information, increased his book to three volumes, and brought it up to date.

We have no hesitation in saying that the same capacity for imparting the precise information which characterised the earlier edition is equally noticeable in this. The arrangement of the contents is not materially different. In the first volume we have a good deal of elementary preparation that ought to have been acquired in school, and some technical problems, including the use of the compass under various conditions and a review of the law of storms. The second volume is more particularly devoted to the problems of nautical astronomy, which are necessary in order to obtain a master's certificate. In the third volume we climb to that dazzling height the attainment of which entitles the ambitious plodder to the coveted "blue ticket" of an extra master. There are not only a great many examples given the working of which would be advantageous, but many useful hints that it would be unwise for the intending candidate to neglect.

The London Catalogue of British Plants. Tenth edition. By F. J. Hanbury. Pp. 48. (London: George Bell and Sons, 1908.) Price 9d.

SINCE the ninth edition of the "London Catalogue" was published in 1895, important events in connection with the nomenclature of British plants have occurred. At the Vienna congress, rules with regard to priority and other matters were framed, and hardly less important for the "London Catalogue" was the publication of the ninth edition of Babington's manual and other special works on British plants. The chief credit for the present revision is assigned to Mr. W. A. Clarke and the Rev. E. S. Marshall, but various specialists have contributed revisions of genera or sections. The number of plants enumerated in the "Catalogue" is appreciably greater than the list issued from the Natural History Museum, since, according to the preface, it aims at providing a useful working list. Although both lists are compiled on similar lines, it will be found that the species under critical genera, such as *Ranunculus*, do not coincide, whence it need only be concluded that experts still agree to differ.

Jahrbuch der Naturwissenschaften, 1907-1908. Edited by Dr. Max Wildermann. Pp. xii+509. (Freiburg: Herdersche Verlagshandlung, 1908.) Price 7'50 marks.

THIS is the twenty-third issue of a year-book in which progress in various branches of science is described in a series of articles by different authors, with references to the original publications abstracted. The subjects are dealt with under (1) physics; (2) chemistry; (3) astronomy; (4) meteorology; (5) anthropology, ethnology, and archaeology; (6) mineralogy and geology; (7) zoology; (8) botany; (9) forestry and agriculture; (10) geography; (11) hygiene and medicine; (12) applied mechanics; (13) technology; (14) miscellaneous reports. In addition, the volume contains summaries of celestial phenomena observable from May 1, 1908, to May 1, 1909, short obituary notices of men of science deceased in the year surveyed, and an author-and-subject index.

The volume should be of service as a general record of scientific work of which accounts have appeared in periodicals and the publications of societies.

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LETTERS TO THE EDITOR.

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Prominence and Coronal Structure.

IN a paper communicated to the Royal Society in December last (Roy. Soc. Proc., A, vol. lxxx., p. 178), an abstract of which appeared in this journal (vol. lxxvii., p. 314, April 2), I directed attention to a peculiar form of prominence which had been photographed with the spectroheliograph of the Solar Physics Observatory in the "K" light of calcium. This prominence, situated towards the south pole of the sun in the eastern quadrant, about position-angle 137° , was recorded on two separate negatives taken at the times 3h. 14m. p.m. and 3h. 50m. p.m. G.M.T. on July 17, 1907. Although on each photograph images of other prominences were recorded, no particular attention was directed to them, as they did not present any unusual features. It may, however, be incidentally remarked that the most intense prominence recorded on both the photographs, and situated near the south pole in the western quadrant about position-angle 218° , was reproduced in the paper in Plate iii., Fig. 5. I did not

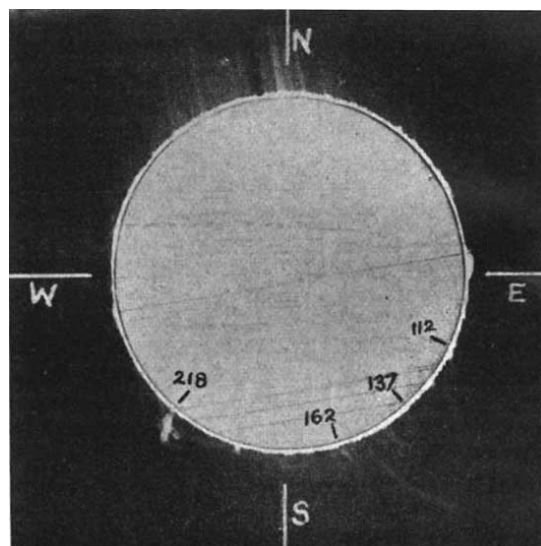


FIG. 1.—The prominences on the Sun's limb photographed in calcium light on July 17, 1907, 3h. 14m. p.m. G.M.T., at South Kensington.

think it necessary for the purpose of that communication to reproduce the whole limb of the sun, but confined myself to the disturbed area in the south-eastern quadrant. The presence of a large prominence in the south-western quadrant has raised questions of identity, so the complete limb is now here reproduced (Fig. 1) to show the relationship between the two prominences and the sun's south pole.

In April last I received from Mr. Philip Fox, of the Yerkes Observatory, U.S.A., a communication in which he wrote:—

"The large prominence which you discuss certainly has curious form. I have examined my plates for July 17, 1907, and find no prominence of unusual form near the south pole in the eastern quadrant, but there is a beautiful one near the pole in the western quadrant at position-angle 215° . I am wondering if by chance you have given the wrong quadrant and if our prominences are identical. I made my exposure at 5h. 56m. p.m. G.M.T."

On both the Kensington negatives there is a large prominence in the south-western quadrant at about position-angle 218° , and it is intense and shows little indication of diminution in brightness. This is, no doubt, the prominence referred to by Mr. Fox, who gives 215°

as its position-angle; its form has, however, considerably changed in the interval of time between the exposures. Mr. Fox kindly forwarded me a photograph of this prominence, which is here reproduced (Fig. 2), and he oriented it in the corner on rather a small scale. This orientation is reproduced by me on a larger scale in white

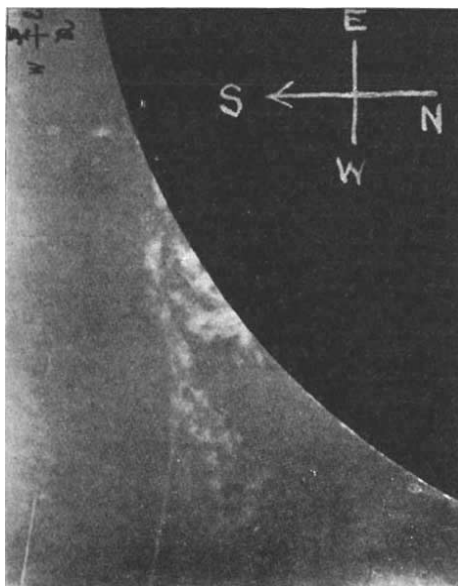


FIG. 2.—The large prominence in the south-west quadrant, photographed in calcium light by Mr. Philip Fox on July 17, 1907, at 5h. 56m. G.M.T., at the Yerkes Observatory, U.S.A.

on the photograph. It will be noticed that the upper portion of the prominence is directed from the south towards the west, but in the Kensington photograph (Fig. 1), and also in Prof. Hale's (Fig. 3), the material is directed from the west towards the south. The question arises, is Mr. Fox's orientation right (his position-angle is correct), or has the material altered its position between the times

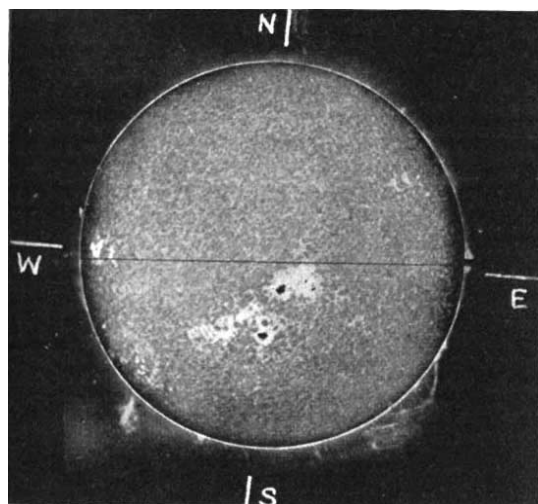


FIG. 3.—The Sun's disc and prominences on the limb, photographed in calcium light by Prof. Hale on July 17, 1907, at 2h. 46m. p.m. G.M.T., at Mount Wilson, U.S.A.

the photographs were taken? I am rather inclined to question the orientation.

Directing attention now to the triple arch prominence about position-angle 137° , which was shown in the first of the Kensington negatives (Fig. 1), I pointed out that in the second photograph, taken thirty-six minutes later,

only remnants of the system remained. So rapidly did the whole of this disturbed region wane in intensity that it is not astonishing to hear that two hours later Mr. Fox reported that no prominence of unusual form was there.

The recent communication to this Journal (vol. lxxviii., p. 151, June 18) by Mr. A. A. Buss is of great interest to me, because it made me acquainted with a photograph, secured by Prof. Hale, of the same prominence taken half an hour previous to the first Kensington picture. Through the courtesy of Mr. Newbegin, jun., I received a copy of this very interesting photograph, and one is now able to follow more accurately the sequence of events in the disturbed area. I hope Prof. Hale will forgive me for reproducing his photograph here (Fig. 3), but it is only by showing the two photographs together that a satisfactory comparison can be made. I have ventured to insert the orientation on Prof. Hale's photograph in order to render the identification of the prominences more easy.

The most striking difference between the two photographs is, apart from their form, the great intensity of the large prominence in the south-east quadrant in Prof. Hale's picture (2h. 46m. p.m. G.M.T.) and its comparative faintness in that obtained at Kensington (3h. 14m. p.m. G.M.T.); other prominences are of about the same intensity in each. This diminution of brightness indicates how rapidly the prominence must have waned during the twenty-eight minutes' interval between the exposures. The second photograph taken at Kensington (3h. 50m. p.m. G.M.T.) showed that this rapid waning had continued.

According to Mr. Buss's visual observations, made between 1h. 30m. and 2h. 20m. p.m. G.M.T., *i.e.* before Prof. Hale's photograph was taken, the disturbance as a whole commenced at about position-angle 112° , where an eruptive prominence was situated. The material from this prominence was ejected towards the south pole, dissolving, as he describes, "from a stout, dense and bright stem into a number of bright, more or less parallel layers of striae." This appearance is shown in Prof. Hale's photograph, but when the Kensington photograph was taken it had assumed the form of concentric arches. These additional facts make me endorse Mr. Buss's opinion, that is, that it is unnecessary to assume that the material forming the arch system originated from a disturbance below it, or, as I stated in my paper, that "their concentric nature seems to suggest that they were produced at one point of initial disturbance and then moved radially outwards."

It may be added that these new facts in no way invalidate the conclusion drawn in my paper, which was that envelopes, similar in form to those photographed during eclipses, had been recorded in calcium light, thus strengthening the view that they were composed of prominence and not coronal matter.

WILLIAM J. S. LOCKYER.

Mendelism: a Personal Explanation

I SHOULD be glad if room could be found for this small matter of personal explanation. I fear I may have misled one or two of your readers on a minor point. Those of them who are interested in the interpretation of hereditary phenomena may remember that in the number of this Journal for September 12, 1907, Mr. Punnett took a reviewer to task for saying that "No one has repeated Mendel's experiments with the deliberate intention of testing the Mendelian interpretation" (of the phenomena of inheritance). In my reply I was not content with defending my original position by justifying that statement; but I must needs carry the war into the enemy's country by taking Mr. Punnett to task for not including de Vries's papers in his list of memoirs dealing with repetitions of Mendel's actual experiments, in order to show how familiar I was with the literature of the subject.

I wish to say that if I had been as familiar with the literature of the subject as Mr. Punnett was, I should not have taken the offensive. Mr. Punnett was quite right in not including a reference to de Vries's papers, because Prof. de Vries, though he has watched the results of crossing in other plants, has not worked with peas. I was misled by the commonly repeated statement that